SUPPORT FOR THE AMENDMENT

This Amendment cancels Claims 3-6, 8-13 and 15; amends Claims 1-2 and 7; and adds new Claim 21. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 1 (i.e., "the lighting system includes a mirror which surrounds the discharge lamp, a filter ..., and a lens head") is found in the specification at least at page 10, line 20 to page 11, line 6. Support for Claim 2 (i.e., "0.1 - 100 μmol/cm^3 of lithium (Li)") is found in the specification at least at page 18, line 11-13. Support for Claim 7 (i.e., "0.1 - 1000 μmol/cm^3 of mercury (Hg)") is found in the specification at least at page 25, lines 5-8. Support for new Claim 21 is implicit at least in Fig. 1 and in the specification at least at page 10, line 20 to page 11, line 6. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 1-2, 7, 14 and 21 will be pending in this application. Claim 1 is independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

The present invention provides an irradiation apparatus that contains a discharge lamp and a lighting system capable of applying light radiation from the discharge lamp to a photosensitizer having a relatively large adsorption coefficient within certain wavelength ranges suitable for photodynamic therapy (PDT) or photodynamic diagnosis (PDD). For PDT, light capable of penetrating tissue and having wavelengths in the range of 600nm-800nm is used. For PDD, light capable of causing the photosensitizer to fluoresce and having wavelengths in the range of 400-440nm is used. By including a specific light filter, the irradiation apparatus of the present invention emits minimal light outside the wavelength

ranges suitable for PDT and PDD, which reduces the sensation of heat experienced by patients undergoing PDT or PDD using conventional discharge lamps emitting unnecessary wavelengths.

Claims 1-3, 6-10 and 13-15 are rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,336,809 ("Clark") in combination with 5,942,850 U.S. Patent No. 5,942,850 ("Rutan").

Clark discloses a tissue photoradiation system, for irradiating dye in the tissue, that includes a single xenon ion laser simultaneously providing sufficient deep blue light for diagnostic use and red light for treatment. Clark at abstract; column 2, lines 23-24. A mirror 12 at one end of a resonator for the laser reflects deep blue and partially transmits red to produce a red light output. Clark at column 2, lines 35-39. A mirror 13 at the opposite end of the resonator reflects red and partially transmits blue to produce a blue light output. Clark at column 2, lines 39-41. A filter 16 insures that no coherent or incoherent red radiation from the laser passes through the transmission system for the blue light and masks the red fluorescence produced when the blue light irradiates tissue containing the dye. Clark at column 2, lines 59-63.

However, Clark is silent about a light source other than a laser and fails to suggest the discharge lamp featured in independent Claim 1.

The Office Action relies upon Rutan for disclosing a discharge lamp. Office Action at page 2, lines 5-7.

Rutan discloses a miniature projection lamp which includes a glass envelope having critical size and design specifications. Rutan's glass envelope is filled with critical amounts of argon, mercury and metal halide material to provide color balance and provide the red, green and blue colors needed for proper color projection. Rutan at abstract; column 1, lines 4-7, 65-67; column 4, lines 36-42.

The Office Action at page 2, lines 6-8, asserts that "[i]t would have been obvious to the artisan of ordinary skill to employ the lamp of Rutan et al in the device of Clark, since Clark requires no particular source ...". Applicants respectfully traverse this assertion. Clark requires a laser.

> My invention recognizes the problems involved in this art and suggests a way that a **single laser** can simultaneously provide both frequencies required for diagnosis and treatment. Clark at column 1, lines 38-41.

> For tissue photoradiation with hematoporphyrin dyes, I prefer a **xenon ion laser** .... Clark at column 2, lines 14-15.

Rutan's miniature projection lamp lacks the energy efficiency of a laser. Because replacing Clark's laser with Rutan's lamp would change the principle of operation of Clark, Clark in view of Rutan fails to render the claims *prima facie* obvious. See M.P.E.P. § 2142.02, page 2100-132. Thus, the rejection over Clark in view of Rutan should be withdrawn.

Furthermore, Rutan fails to remedy the deficiencies of Clark with respect to independent Claim 1's discharge lamp. Rutan fails to suggest Claim 1's discharge lamp, which "is filled with ... at least one selected from the group consisting of lithium (Li) and sodium (Na)".

Regarding the materials in Rutan's lamp, Rutan discloses

> The proper mixtures are combined to yield a high luminous efficacy of on the order of 60 lumens per watt while maintaining the proper source apparent color temperature of about 5,000K to 6,000 K. Color balance of the spectral output is achieved utilizing the preferred ranges and provide the red, green and blue colors needed for proper color projection. Rutan at column 4, lines 36-42.

> The metal halide material is a mixture of individual compounds selected from the following list which includes but is not limited to cesium iodide, indium iodide, lithium iodide, scandium iodide, sodium iodide, and thalium iodide, in amount ranging from about 50 to 1000 micrograms. Rutan at column 4, lines 28-32.

However, if only lithium (Li) or sodium (Na) is selected, then an apparent color temperature of 5,000K to 6,000K cannot be obtained.

The specification at Figs. 3-4 shows the emission spectra of lamps filled with Li and Na, respectively. The color temperature of the lamp filled with Li is calculated to be 3,630K. The color temperature of the lamp filed with Na is calculated to be 2,270K. The color temperatures were calculated based on "Method for determining distribution temperature and color temperature or correlated temperature of light source".

The above results suggest that if only lithium (Li) or sodium (Na) is selected as the material to be sealed in the lamp, then a color temperature of 5,000K to 6,000K cannot be obtained.

Because the color temperature of Rutan's lamp is significantly higher than that achieved using the discharge lamp of independent Claim 1, Rutan's lamp fails to suggest the independent Claim 1 limitation of a discharge lamp "filled with ... at least one selected from the group consisting of lithium (Li) and sodium (Na)". Because Rutan fails to remedy the deficiencies of Clark, the rejection over Clark in view of Rutan should be withdrawn.

Claims 4-5 and 11-12 are rejected under 35 U.S.C. § 103(a) over Clark in combination with Rutan and further in view of JP54-30228 ("Tokyo"). Claims 4-5 and 11-12 are canceled, so the rejection is moot and should be withdrawn.

New Claim 21 is further patentably distinguishable over the cited prior art. Clark requires mirrors 12 and 13 that are partially transparent. However, the cited prior art fails to suggest the limitation of Claim 21 of an "opaque" mirror that surrounds a discharge lamp.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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